Series BDF

Large Displays for time counters

FEMA ELECTRÓNICA

BDF-xx-CRH   counter of hours
BDF-xx-CRM   counter of minutes
BDF-xx-CRS   counter of seconds
BDF-xx-CR7   counter of cents of second

IDEAL SOLUTION for counting time in decimal format (seconds, minutes, hours, ...) and indicating the value at long distances. All units with reset and control for start / stop. Very strong housing and electrically protected units, designed for all type of industrial applications.

Models CRH, CRM, CRS and CR7

Large displays for time counting

The BDF series of large displays for time counting applications is made of models «CRH», «CRM» , «CRS» and «CR7». All units are available in 4 and 6 digits format with 57mm or 100mm digit height.

All units have control for «START» / «STOP» function with mechanical contact and «RESET» function.

The mechanical of the BDF instruments is a very strong and sturdy aluminium housing anodized in black color, for panel mount, and for wall mount as an option. The front lens is antir-reflexive and is firmly inserted on the aluminium profile with a rubber gasket around, providing IP65 protection on the front.

The signal wires are connected to plug-in screw clamps for higher security of the connections, accessible at the rear side of the instrument. The power is connected to a 3 terminal plug (2 power connections and 1 earth) containing an integrated protection fuse and an additional fuse as spare part.

Order reference

		Size	Model	Power	Color	Others
BDF	-	**24**	**CRS**	**0**	**R**	**---**
		-24	-CRH	-0 (230 Vac)	-Red	-65 *(IP65)**
		-44	-CRM	-1 (115 Vac)	-Green	-*(empty)*
		-26	-CRS		(check for	
		-46	-CR7		availability)	

* the IP65 option uses a completely different type of housing from the indicated in this documentation. Check the BDF IP65 housing documentation for more information.

Sizes

SIZE BDF-24 -   Instrument with 4 digits digit 57mm height (2,3'')

SIZE BDF-44 -   Instrument with 4 digits digit 100 mm height (4,0'')

SIZE BDF-26 .-   Instrument with 6 digits 57mm digit height

SIZE BDF-46 .-   Instrument with 6 digits 100mm digit height
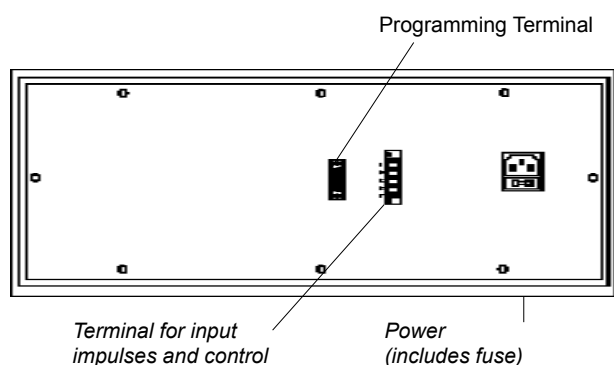
Models

MODEL BDF-xx-CRH .- Time counter for Hours, up to 1999.99 hours, with control for «START», «STOP» and «RESET»

MODEL BDF-xx-CRM .- Time counter for Minutes, up to 150000 minutes, with control for «START», «STOP» and «RESET»

MODEL BDF-xx-CRS .- Time counter for Seconds, up to 999999 seconds, with control for «START», «STOP» and «RESET»

MODEL BDF-xx-CR7 .- Time counter for Cents of Second, up to 1999.99 seconds, with control for «START», «STOP» and «RESET»
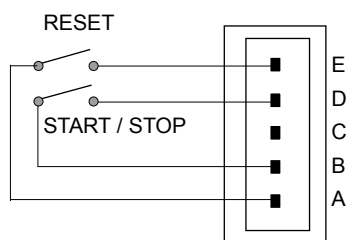
Rear view

Programming Terminal

Terminal for input impulses and control

Power (includes fuse)

Front view

A   B

Negative sign

D

Decimal point selectable

Negative sign   *Decimal point selectable*

The BDF Time Counter units are available in 4 and 6 digits format. All digits are 7 segment LED type with decimal point, negative sign and red color

Leds «B» and «D» are lighted when the unit is being reprogrammed through the *«Programming Terminal»* on the rear cover.

Digits «A» are only available in units with 4 digits. These small digits will light only when the unit is being reprogrammed through the *«Programming Terminal»* on the rear cover.
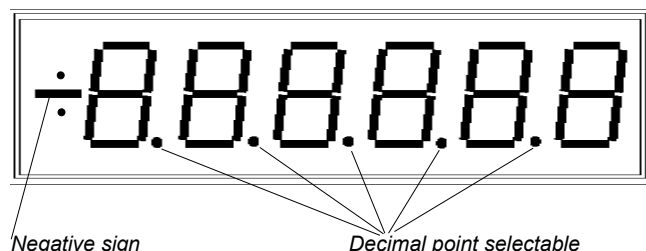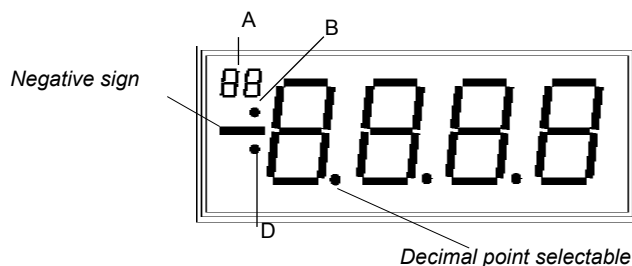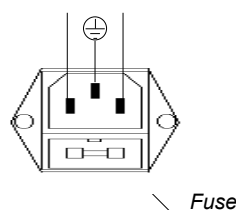
Connections terminal

All BDF Counter units have «RESET» function by mechanical contact on the rear side of the instrument. Connection is done between terminals «E» (Reset) and «A» (Common).

Connections for «START» and «STOP» control are done between terminals «B» and «D». The status of this switch will determine if the units counts or not-counts..

RESET

START / STOP

E
D
C
B
A

Power supply connections

The power connector allows one terminal for earth and two power terminals. Internal fuse is integrated on the connector and an additional fuse is available as a spare part. The value of the fuses depends on the power supply, and is according to rule IEC127/2

        230 Vac - 200 mA fuse time-lag
        115 Vac - 400 mA fuse time-lag

*Powered
230 Vac (115 Vac optional)*

Fuse

General specifications

DISPLAY   4 or 6 digits in red color
7 segment Led
reading from -9999 to 9999 in 4 digits
reading from -999999 to 999999 in 6 digits
decimal point selectable
digit 57 mm (2,3") in BDF-24 and BDF-26
digit 100 mm (4,0") in BDF-44 and BDF-46
antirreflexive front filter
IP65 front protection

ENVIRONMENTAL DATA
Working Temp. 0/+50ºC (32/122 ºF)
Storage Temp. -20/+85°C (-4/185ºF)
Rel. Humidity 0 to 85% non condensated

HOUSING   extruded aluminium
anodized in black color
for panel mount (optional wall mount)

POWER SUPPLY standard 230 Vac 50/60 Hz
(optional 115 Vac 50/60 Hz)

CONSUMPTION 6 VA in series BDF-24 and BDF-26
12 VA in series BDF-44 and BDF-46

Internal jumpers

The internal jumpers at the control panel must be configured as indicated below :

Jumpers A,B,C,D,F	Closed
Jumpers E	Open
Jumpers H,G	Closed
Jumpers J,K	Open

«Control board»

Program codes - 4 digit units

MODEL CRH (Range 1999 Hours)

41	-1#	Reset to default values
*		Switch to counter mode
45	4#	Factor x0.001
44	2#	Flange x2
3		Factor x 0.0028 (a 60Hz 0.0023)
2		Maximum 1999
56	5#	Load 0000 when reaching 1999

MODEL CRM (Range 9999 Min.)

41	-1#	Reset to default values
*		Switch to counter mode
45	4#	Factor x 0.001
3		Factor x 0.3333 (a 60Hz 0.2778)
2		Maximum 9999
56	5#	Load 0000 when reaching 9999

MODEL CRS (Range 9999 Sec.)

41	-1#	Reset to default values
*		Switch to counter mode
45	3#	Factor x 0.01
3		Factor x 2.0000 (a 60Hz 1.6666)
2		Maximum 9999
56	5#	Load 0000 when reaching 9999

MODEL CR7 (Range 99.99 Sec.)

41	-1#	Reset to default values
*		Switch to counter mode
3		Factor x 2.0000 (a 60Hz 1.6666)
2		Maximum 99.99
56	5#	Load 00.00 when reaching 99.99
46	3#	Decimal point XX.XX

Program codes - 6 digit units

MODEL CRH (Range 1999.99 Hours)

41	-1#	Reset to default values
*		Switch to counter mode
45	4#	Factor x0.001
44	2#	Flange x2
3		Factor x 0.002778 (a 60Hz 0.002315)
2		Maximum 1999.99
56	5#	Load 0000.00 when reaching 1999.99
46	3#	Decimal point XXXX.XX

MODEL CRM (Range 150000 Min.)

41	-1#	Reset to default values
*		Switch to counter mode
45	4#	Factor x 0.001
3		Factor x 0.333333 (a 60Hz 0.277778)
2		Maximum 150000
56	5#	Load 0000.00 when reaching 150000

MODEL CRS (Range 999999 Sec.)

41	-1#	Reset to default values
*		Switch to counter mode
45	3#	Factor x 0.01
3		Factor x 2.000000 (a 60Hz 1.666666)
2		Maximum 999999
56	5#	Load 0000.00 when reaching 999999

MODEL CR7 (Range 9999.99 Sec.)

41	-1#	Reset to default values
*		Switch to counter mode
3		Factor x 2.000000 (a 60Hz 1.666666)
2		Maximum 9999.99
56	5#	Load 0000.00 when reaching 9999.99
46	3#	Decimal point XXXX.XX

Programming codes

The BDF Time Counter instruments are configured by programming codes that activate internal «scale factors», decimal points, and other elements which scale the signal counted on display.

The programming of these codes is done through the 15 pin SUB-D connector at the rear side of the instrument. A «KBD Programming Keyboard» is needed, or the connections shown in Figure 1 need to be set-up.

Buttons «1» to «6» introduce the numerical characters 1, 2, 3, 4, 5 and 6 on display, button «#» executes «ENTER» on the displayed code. Button «*» adds negative sign in some codes.

Note .- When KBD (or contacts indicated in Figure 1) are connected to the BDF, the point placed under the negative sign will light. This led must be «on» during the reprogramming of the unit (if the led is not lightning, but the led on top of the negative sign lights, then press «» to switch leds).*

Note .- When KBD (or contacts indicated in Figure 1) are connected to the BDF Ratemeter with 4 digits, the 2 small 7 segment displays on top left part will light. These digits are needed to program some codes which are 6 digit codes.

Programming example

The programming codes are made of 2 digits identifying the code, and a third digit identifying the value assigned to the code.

Code «41» with value «1» is represented as «41 1#». Button «#» acts as a validation of the code and value entered. If this button is not pressed, the unit will not validate the new value.
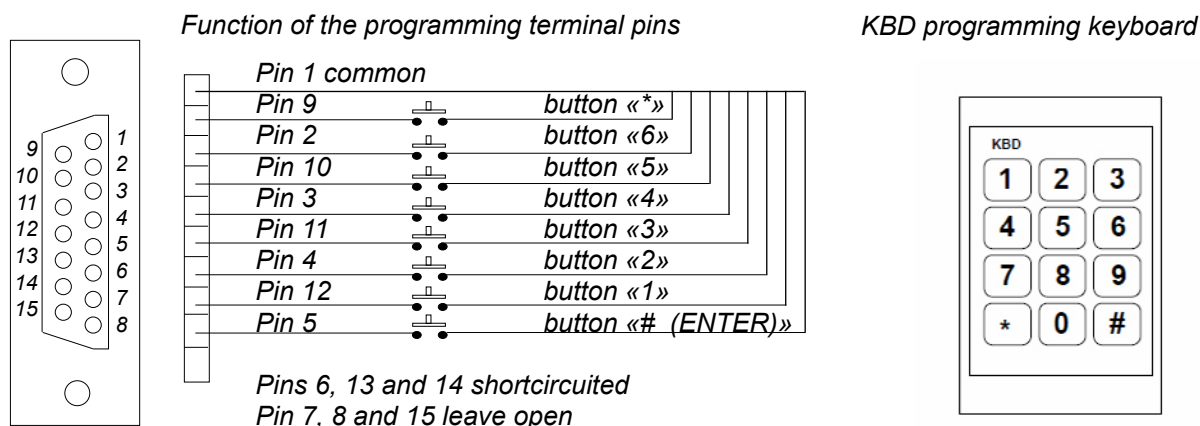
EXAMPLE

Introducing code «41 1#»

Press 4   Number 4 appears on display, to the left
Press 1   Number 1 appears on display, to the left
           The current value for code 41 appears to the right (it can be 1 or 2)
Press 2   Number 2 appears on display, to the right replacing the previous value
Press #   Validates the code and the value entered (in this case 41 1)

Note .- After 6 seconds without introducing data, the instrument will cancel the programming code without validation.

Note .- Codes «1», «2» and «3» are special codes composed by only 1 digit. The value is a 6 digit numerical value and will load on display as soon as the code is pressed. The way to modify this value is to modify each digit value independently by pressing 1 to 6 and then # to validate the whole.
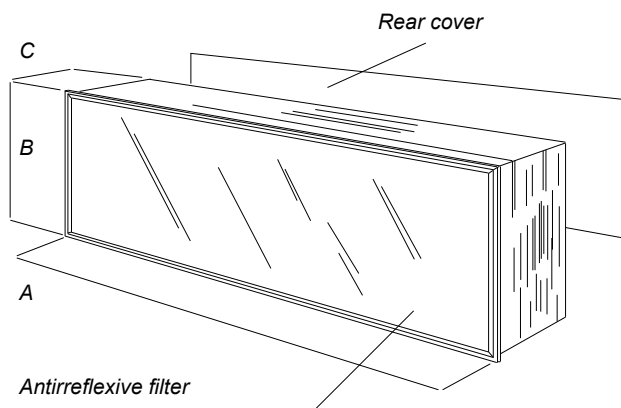
Figure 1

Function of the programming terminal pins

Pin 1 common
Pin 9   button «*»
Pin 2   button «6»
Pin 10   button «5»
Pin 3   button «4»
Pin 11   button «3»
Pin 4   button «2»
Pin 12   button «1»
Pin 5   button «# (ENTER)»

Pins 6, 13 and 14 shortcircuited
Pin 7, 8 and 15 leave open

KBD programming keyboard

Mechanical dimensions

Size 24	A	B	C
4 digits 57mm *(2")*	264mm *(10,40")*	120mm *(4,75")*	112mm *(4,41")*

Size 44	A	B	C
4 digits 100mm *(4")*	480mm *(18,90")*	180mm *(7,09")*	112mm *(4,41")*

Size 26	A	B	C
6 digits 57mm *(2")*	384mm *(15,12")*	120mm *(4,75")*	112mm *(4,41")*

Size 46	A	B	C
6 digits 100mm *(4")*	668mm *(27,10")*	180mm *(7,09")*	112mm *(4,41")*

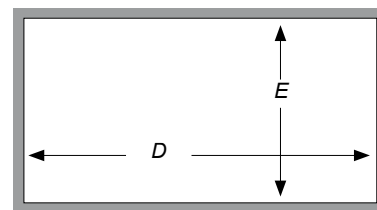*Note .- add 27mm to the «C» dimension for the power supply plug*

Rear cover

C

B

A

Antirreflexive filter

Panel cut-out and weights

Size 24	D	E	weight
4 digits 57mm *(2")*	256mm *(10,07")*	112mm *(4,40")*	2.3 Kg *(5 lbs)*

Size 44	D	E	weight
4 digits 100mm *(4")*	472mm *(18,58")*	172mm *(6,77")*	5.0 Kg *(11 lbs)*

Size 26	D	E	weight
6 digits 57mm *(2")*	376mm *(14,80")*	112mm *(4,40")*	2.7 Kg *(6 lbs)*

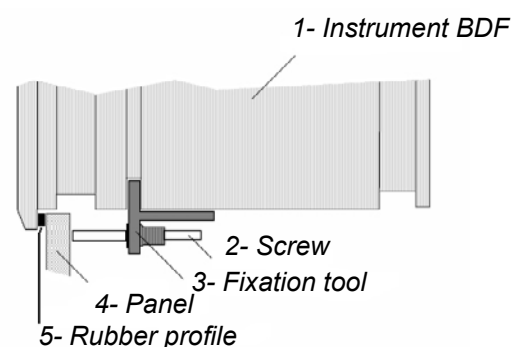| Size 46	D	E	weight
6 digits 100mm *(4")*	680mm *(36,77")*	172mm *(6,77")*	5.7 Kg *(12,5 lbs)*

PANEL CUT-OUT

E

D

Panel width
Max. 14 mm (0,55")
Min. 2,5 mm (0,10")

Panel installation

Introduce instrument «1» into the panel cut-out and place the fixation piece «3» on each side. Place screw «2» through fixation piece «3» until it presses the panel «4» and is firmly fixed.

Note - The front of the instrument is sealed IP65. To have the same level of protection between the panel and the instrument, place a rubber profile (squared or round) as indicated «5».

1- Instrument BDF
2- Screw
3- Fixation tool
4- Panel
5- Rubber profile

Warranty

All instruments are warranted against all manufacturing defects for a period of 24 MONTHS from the shipment date. This warranty does not apply in case of misuse, accident or manipulation by non-authorized personnel. In case of malfunction get in contact with your local provider to arrange for repair. Within the warranty period and after examination by the manufacturer, the unit will be repaired or substituted when found to be defective. The scope of this warranty is limited to the repair cost of the instrument, not being the manufacturer eligible for responsibility on additional damages or costs.

CE Declaration of conformity

Manufacturer FEMA ELECTRÓNICA, S.A.
Altimira 14 - Pol. Ind. Santiga
E08210 - Barberà del Vallès
BARCELONA - SPAIN
www.fema.es - info@fema.es

Series- BDF-24 y BDF-44
Models CRH, CRM, CRS and CR7

The manufacturer declares that the instruments indicated comply with the directives and rules indicated below.

Directive of electromagnetic compatibility 2004/108/CEE
Directive of low voltage 73/23/CEE

Security rules   61010-1
Emission rules   50081-2
Immunity rules   50082-1

NOTE .- During an electromagnetic disturbance (10V/m) it is permitted a worst case error of 1% of the A/D range. The instrument will recover automatically its functionality when the disturbance stops, without need of the operator to reset or restart.

Barberà del Vallès October 2009
Daniel Juncà - Quality Manager

Precautions on installation

INSTALLATION PRECAUTIONS.- The installation and operation of this instrument must be done by qualified operators. This instrument DOES NOT have power switch and will start to operate as soon as the power supply is connected. The instrument has an internal protection fuse, according to IEC-127/2, and is located inside the power-supply connector. The values are

Fuse 200 mA Time Lag (for 230 Vac power)
Fuse 400 mA Time Lag (for 115 Vac power)
Fuse 350 mA Fast (for 24 Vdc power)

When the instrument is used to control machines or processes where the personnel or the process can be damaged, the appropriate security elements must be added to the system in order to protect the operator and / or the system.

SAFETY PRESCRIPTIONS.- This instrument has been designed and verified according to the UNE-20553 rules and is delivered in perfect conditions of operation. This manual contains the adequate information for the electrical installation. Before starting operations for connections, readjustment, substitution, maintenance, repair, etc, the instrument must be unplugged from the power supply. The instrument must be installed in places with good ventilation to avoid excessive heating, and far from sources of electrical noise or magnetic field generators, such as power relays, electrical motors, speed controls, etc... The instrument can not be installed in open places. Do not use until the installation is finished. The instrument is designed to be mounted on a metallic panel with the adequate protections. DO NOT clean the front lens with abrasive products (such as solvents, alcohol, etc) use a clean and water humid rag. Do not expose the instrument to excessive moisture. DO NOT operate the unit in the presence of flammable gases or fumes.

EXCITATION VOLTAGE Vexc.-
Instruments BDF-xx-32 and BDF-xx-36 supply an excitation voltage of 10 to 24 Vdc (50mA) to power transducers, available between terminals A and C. Do NOT connect these terminals to an external power supply, permanent

damages may result on both instruments.

POWER SUPPLY .- Connect the Power Supply to the terminals indicated in this manual. Verify that the voltage and frequency of the power supply is according to the voltage and frequency values indicated in the label attached to the unit. DO NOT connect the instrument to power lines which are overloaded, or power lines with loads working in ON/OFF cycles, or with inductive loads.

SIGNAL WIRING .- Information to consider relating the wiring of the sensors, probes, transducers, etc. The wires can act as antennas and introduce electrical noise from the environment into the signal wires, specially if the wires are close to noise sources or electromagnetic sources. There are several rules generally known which should be taken into consideration for the wiring :

a.- DO NOT install impulse, control or signal wires together in the same conduits as the wires connected to power lines, connected to CC or AC engines, electromagnets, ...

b.- When using shielded wires, connect the shield to the common of the instrument, and leave not-connected the probe side

c.- The wires of impulse, control and signal should be placed in places far away from switches, transformers, control relays, etc...

IN CASE OF FIRE
1.- Disconnect the unit from the power supply.
2.- Give the alarm according to the local rules.
3.- Switch off all the air conditioning devices.
4.- Attack the fire with carbonic snow, do not use water in any case.

WARNING : In closed areas do not use systems with vaporized liquids.

other products

Panel Meters
Standard 96x48mm

Panel Meters
Small 72x36 mm

Panel Meters
Miniature 48x24 mm

Large Displays
60 & 100 mm digit

Signal Converters
& Isolators

Panel Meters
Standard 96x48mm

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